Ixxat®
BY HMS NETWORKS

SG-gateway with 4-Port Switch and PROFINET

Multi connectivity in industrial and energy automation with cloud connection – in one small device

The SG-gateway supports the communication protocols used in the energy sector, including IEC60870-5-104 and IEC61850 and enables connectivity for numerous different energy devices in different networks. On top of that the simultaneously usable OPC-UA and MQTT functionality empower direct integration into the companies' cloud-based applications.

The 4-port switch enables routing of any of the Ethernet-based protocols between 2 separate IP networks.

The PROFINET interface for Siemens PLCs is an isochronous real-time device interface with integrated 2-port switch that enables seamless network integration regardless of the network topology.

By combining PROFINET, 4-port switch, another Ethernet interface and a serial interface, the SG-gateway offers enormous flexibility in network design and cyber-security through the simple and secure separation of the different network segments.

In addition to the IEC61850 and IEC 608710 protocols, other electric equipment in the field can also be connected via Modbus TCP and RTU.

FEATURES & BENEFITS

- Connects intelligent electrical devices (IEDs) with IEC protocols to PLC systems for industrial automation via PROFINET or Modbus
- Easy way to transfer I/O data from electrical devices in the field to SCADA systems or cloud systems
- Connects industrial machines and PLCs to energy switchgears and energy SCADA systems as well as to cloud systems
- Easy way to route and convert different protocols in any direction
- Separate communication channels in the device enable secure network separation
- Supports several communication protocols (IEC61850, IEC60870-5-104, Modbus, OPC-UA, MQTT)
- Connectivity via Ethernet or via optional 4G/LTE modem
- Easy web-based configuration using any standard browser
- Onboard WebPLC for easy data conversion and control functions
- Robust metal housing for stand-alone operation with DIN rail mounting
- Global technical support and consulting services
- Range of cybersecurity features including password protection, user management, and OpenVPN
- Continuous software maintenance by HMS, devices can be upgraded in the field or remote
- Easy export and import of configuration to ease volume installations

PROFINET INTERFACE

- PROFINET-IO Real-Time (RT) Class 1 & 3 Communication V 2.31
- Max. 1440 bytes input and 1440 bytes output data
- Up to 128 modules
- Baud rate 100 Mbit/s fixed
- SNMP MIBII support
- Generic and PROFINET-specific diagnostic support
- Supports the PROFIenergy profile
- Supports the Media Redundancy Protocol (MRP)
- Adaptation of the device identity
- Supports PROFINET Fast Start Up
- PROFINET uplink configuration via GSDML file
- Integrated IRT switch enables daisy-chain topology

- Two RJ-45 network ports available simultaneously

4-PORT SWITCH
- Hardwired to second internal Ethernet interface
- All Ethernet-based protocols and features are also available via the integrated switch
- 4 x RJ45 10/100BaseT connectors

ADDITIONAL INTERFACES

ETHERNET INTERFACE
- 10/100 Mbit/s
- DHCP server
- SNTP
- NAT routing
- SNMP manager

SERIAL INTERFACE
- Selectable RS-232/485
- Serial baud rate 300 bps - 187,5 kbps

SECURITY FEATURES
- OpenVPN client
- TLS version 1.3 data encryption
- Integrated Firewall
- Password protection with password policy
- Support for user roles
- Root access authentication
- Usage of standard ports for easy integration into firewalled environments
- Encrypted and signed files for firmware-updates
- Password protection for configuration export & import

MODBUS/TCP
- Supports Modbus TCP Client/Server
- Connects up to 128 server devices and supports 4096 values

MODBUS RTU
- Supports Modbus RTU Master/Slave
- Connects up to 128 serial Modbus RTU slave devices and supports up to 4096 values

IEC61850 (OPTIONAL)
- Client/Server
- Goose Publisher/Subscriber
- Up to 4096 data objects (each data object with value, quality and timestamp)
- 32 server devices supported in Client configuration

IEC60870-5-104 (OPTIONAL)
- Client/Server functionality
- Up to 4096 data objects (each data object with value, quality and timestamp)
- 32 server devices supported in Client configuration
- Support for IEC60870-5-104 redundancy according to Norwegian User Convention

4G/LTE MODEM (OPTIONAL)
- Send and receive SMS
- In addition, all Ethernet-based protocols of the SG-gateway can be used via 4G/LTE: E.g. for remote access to the control room via IEC60870-5-104 or IEC61850 protocols.
- Uplink up to 5 Mbps
- Downlink up to 10 Mbps
- Mini SIM (2FF)
- Variant for Europe:
  - 2G bands: B3/B8 (1800/900 MHz)

- 3G bands: B1/B3/B8 (2100/1800/900 MHz)
- 4G bands: B1/B3/B7/B8/B20/B28A (2100/1800/2600/900/800/700 MHz)
- Variant for North America:
  - 3G bands: B2/B4/B5 (1900/1700/850 MHz)
  - 4G bands: B12/B14/B4/B2/B5/B13/B66/B71 (700/700/1700/1900/850/700/1700/600 MHz)

OPC-UA
- Micro Embedded Device Server Profile
- UA-TCP, UA-SC, UA-Binary protocol and encoding
- Up to 128 groups, 4096 values
- Up to 4 concurrent client sessions

MQTT
- Client version 3.1 and 3.11
- Flexible for own definition of payloads
- Last will, QoS, Keep alive interval
- TLS encryption

CONFIGURATION INTERFACE

The application logic can be realized on the device either using the integrated graphical web editor or by using a predefined configuration loaded to the device. The graphical web editor is a very intuitive and easy to use interface to program software applications and configure the gateway. No engineering tools are required and it can easily be accomplished by service technicians.
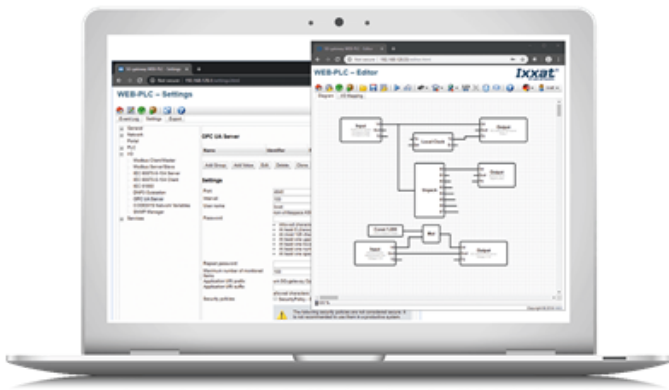
TECHNICAL SPECIFICATIONS

Dimensions (L●W●H)	79 x 65 x 107 mm with included connectors plugged
Weight	450 g or 1 lbs
Operating temperature	0 to +55 °C or +32 to +131 °F
Enclose material	Powder-coated, aluminum-zinc hot-dipped steel, RAL 7021
Power supply	24 VDC (+/- 15%); Weidmüller BL 3.50/03 (connector included)
Current consumption	250 mA at 24 V DC
Ethernet interface	1 x 10/100 BaseT RJ45, link and traffic LED indicators
Switch	4 x 10/100BaseT RJ45, connected to second internal Ethernet interface
PROFINET interface	2 x RJ45, PROFINET-IO Real-Time (RT) Class 1 & 3 Communication V 2.31 with integrated IRT switch
Serial interface	1 x RS232/RS485 (selectable), Weidmüller B2L 3.50/08 (included)
SD-card	microSD card SD/SDHC, push/push slot
Optional modem	4G/LTE modems for Europe or North America, antenna for SMA socket not included (in the accessories section you will find the matching antenna)

Mechanical rating	IP20, NEMA rating 1
Mounting	DIN-rail (EN 50022 standard)
Always included protocols	Modbus TCP Client/Server, Modbus RTU Master/Slave, OPC-UA Server, MQTT Publisher/Subscriber, Kolibri (for HMS Hub connectivity)
Optional protocols	IEC61850 Client/Server, IEC60870-5-104 Client/Server
Config method	Integrated webserver
Certifications	CE, cUL, FCC* * FCC for devices with wireless modem (4G)

TECHNICAL SERVICES

The Ixxat Energy Technical Services Team is always on your side. We offer different service levels to fit your needs and fill the knowledge gaps you have for your next project!

→ Learn more...

Ordering information

Order Code	**ASG2221 ((IEC60870-5-104 Client/Server + IEC61850 Client/Server + 4G/LTE for North America)**
Additional Order Codes	ASG2220 ((IEC60870-5-104 Client/Server + IEC61850 Client/Server + 4G/LTE for Europe) ASG2206 ((IEC60870-5-104 Client/Server + IEC61850 Client/Server)
Included components	4 GByte microSD memory card Power connector (Weidmüller BL 3.50/3) Serial connector (Weidmüller B2L 3.50/8) CAN connector (Weidmüller B2L 3.50/04) (power supply and 4G antenna NOT included)
Accessories	ISG9500-C (3G/4G antenna with SMA connector)
Required software	Ixxat IP configurator (for IP configuration - Freeware) Downloadable under Support	Files and Documents